
Histogram

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ISSUE 1

April 2019



Newsletter of The Histotechnology Society of NSW

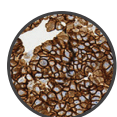
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HistoCyte Control Material

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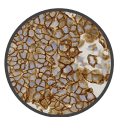
They have developed a range of controls, some with as few as two cell lines providing a positive and negative: Standard Controls. There is also a supply of more comprehensive products with as many as five cell lines, providing a range of expression and sensitivity: The Dynamic Range^{DR}.



Breast Analyte Control^{DR}



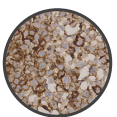
Estrogen Receptor Analyte Control^{DR}



HER2 Analyte Control^{DR}



HPV/p16 Analyte Control^{DR}



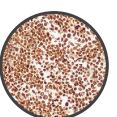
PD-L1 Analyte Control^{DR}



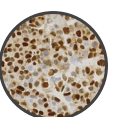
Progesterone Receptor Analyte Control^{DR}



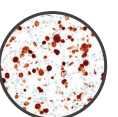
ALK-Lung (EML4-ALK) Analyte Control



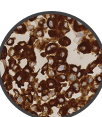
ALK-Lymphoma (NPM-ALK) Analyte Control



Breast Analyte Control (ER, PR and HER2)



HPV/p16 Analyte Control



ROS1 Analyte Control

HistoCyte now available in Australia.
Research Use Only.



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Committee Members

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|-------------------------|----------------------|-------------------------------|
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| Vice-Chairman | Bill Sinai | Life Member |
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| Assistant Secretary | Katherine Wells-Reed | Douglass Hanly Moir Pathology |
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| Committee Member | Leah Simmons | TAFE NSW |
| Committee Member | Ewen Sutherland | Thermo Fisher |
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| Committee Member | Tamara Szynda | UTS |
| Student Representative | Adrian Ureta | TAFE Ultimo |
| Student Representative | Andrew Da Silva | TAFE Ultimo |

| Sub-committee 2018-2019 (Media & Newsletter) | | |
|--|------------------|-------------------------------|
| Position | Name | Organisation |
| Editor- Histogrpah | Linda Prasad | Children's Hospital, Westmead |
| Sub-committee Member | Momoko Sakaki | Children's Hospital, Westmead |
| Sub-committee Member | Cristina Antonio | Douglass Hanly Moir Pathology |

THARMAC
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Cytospin centrifuge
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Editorial

Welcome to the first edition of the Histogram for 2019. We hope everyone had a pleasant festive season and a great start to the New Year.

We have a stimulating year ahead of workshops and educational talks. To give you a sneak peek: we have a digital imaging workshop, Organisms workshop, a glass slide webinar and an Advanced Tissue Recognition workshop focusing on the GIT. We just completed the Fixation workshop on the 30th March 2019 and a summary and photos from the event are included in this edition.

The workshops are a great way to gain new knowledge and refresh what you already know. Stay tuned in through the Website and Facebook page for all workshops and updates. Please remember to sign up to be a member of the Histotechnology Society of NSW to receive discounts on workshops and access to the workshop material in a members only section of the website (being currently created).

Histotechnology Professionals Day was on the 10th of March 2019. It is a day to recognise and celebrate the extraordinary work done every day by histology technicians, who make a real difference to the lives of the patients whose specimens we are entrusted with. Check out the photos from the Histology Department at the Children's Hospital at Westmead who celebrated the day in hilarious style.

In this issue we have an inspiring article from James Townsend, Technical Officer at DHM about how he got into histology. James has come such a long way for someone that had no idea what he wanted to do only a few years back. We would love to hear about how you got into or found histology. Please send me your story and I will publish it in the next coming issues.

How did you go with the Test and Teach from the last issue of the Histogram? If it left you scratching your head, never fear, the answers are in this edition with a great explanation by Tony Henwood. Tony has also wrote a very interesting article on Prussian Blue. Did you know that Prussian blue is not only used to stain iron in histology but it is used as a medication to treat thallium and caesium poisoning.

An issue that many Histotechs have when they receive a specimen is—is it in formalin? I have written an article on a quick and easy test using Schiff's reagent to determine the answer without having to stick your nose in and irritate your nostrils and eyes.

The Histogram is an educational tool for all people working in Histology, and we invite you to contribute and participate. Share your knowledge, ideas, stories, interests with fellow histotechnologists by submitting relevant review articles, technical notes, troubleshooting methods, tricks of the trade and any form of Histology art. The next Histogram will be due in August 2019, so please email me at the address below if you would like to publish an article.

Linda Prasad

Editor of the histogram

✉ lindaprasad@health.nsw.gov.au



Chairman's Report

Planning is well underway for our workshops and seminars in 2019. Our first is a workshop of presentations on Fixation which is designed for students with projects involving tissue fixation. The planning, principles and preparation for Histology. The workshop is being held at UTS Sydney. There is no cost involved. We feel the preparation area of projects is an area that is little understood and is something we can assist students with.

The next National Histology Conference is being held in Adelaide, 24th to 26th of May 2019. Information is on the Conference website www.nationalhistologyconference.com. Information on registration and a preliminary program is located there. These are always well attended and informative Conferences so we encourage you and your colleagues to attend. We look forward to seeing you in Adelaide.

Our Committee has decided to move forward with the Histogram and forward it as an electronic copy. Some hard copies will be available for members who are not able to receive an electronic version. Several of our interstate Histology groups have been utilising electronic copies of their newsletters for several years. We would be interested in any feedback on this decision.

The following National Conference is planned to be held in Sydney in 2021. This seems a long way off although the planning for these Conferences needs the 2 years. It will come around quickly. IAP [International Academy of Pathology] have contacted us regarding running a combined Conference [we did this with a National Conference in Brisbane]. We have started discussions at this stage with no decision.

Work on the National review on the Certification of the Med Lab Scientific Workforce continues.

For information on the Workshops and seminars is being updated regularly so please regularly review our website and Facebook.

Cheers,
Trevor Hinwood.
Chairperson.
Histotechnology Society of NSW

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Histotechnology Professionals Day

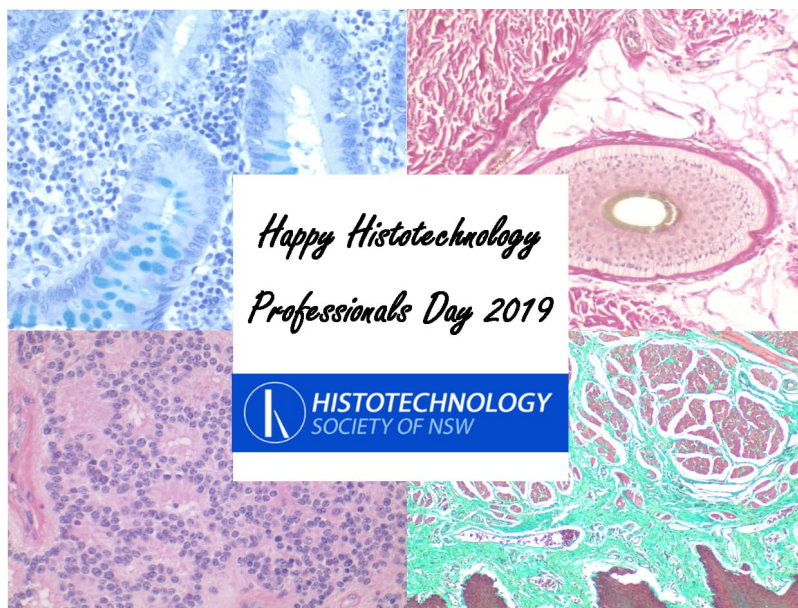


Photo courtesy of Momoko Sakaki from the Children's Hospital @ Westmead



Hi Histopeeps did you know that on March 10, 2010, The National Society for Histotechnology (NSH) announced the inaugural celebration of an annual Histotechnology Professionals Day; a day dedicated to raising awareness about the field of Histotechnology. Thank you to all the histotechs on the great and rewarding jobs you all do. Here are some pictures of how The Children's Hospital @ Westmead celebrated this special day parading with their funky T-shirts.

Linda Prasad
Editor



What are these Blue Round Bodies? Test and Teach from Last Issue

Tony Henwood. Histopathology, the Children's Hospital at Westmead

These blue, round bodies could be easily missed on a H&E stain of this placental section. Are they an artefact or possibly the round hyaline bodies sometimes seen in autolytic tissues? These latter bodies, though, tend to appear pink on H&E staining. Some pseudo-fungi can resemble these and will give a positive PAS reaction (figure 2) but will not give a positive GMS reaction for fungi (Henwood 2017). These bodies were GMS positive (figure 3). Therefore, they are consistent with a yeast.

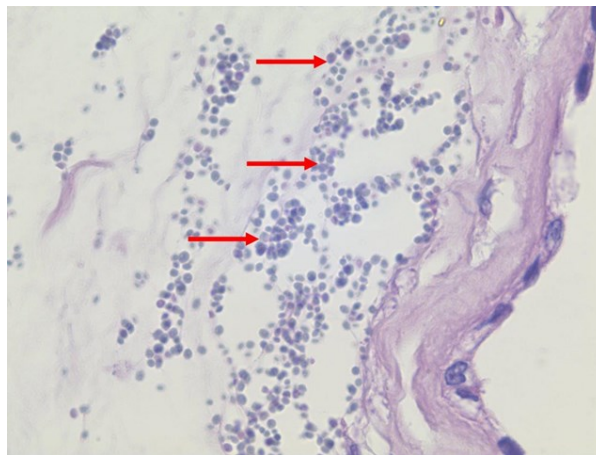


Figure 1 H&E x100

Fungi can exist in several forms in tissue: a filamentous and an ovoid form. *Candida albicans* is a polymorphic fungus that can grow as an ovoid budding yeast (named blastospores in older literature), as elongated ellipsoid cells that remain attached at a constricted separation site (pseudohyphae), or as parallel-sided true hyphae (Jacobsen et al 2012). Microbiology culture in this case identified the fungi as *Candida glabrata*.

There are interesting features of this case that are worthy of note. Even though *Candida albicans* can be observed as hyphae or ovoid yeasts, most histological pictures of invading *C. albicans* cells show the hyphal form. It is generally accepted that the hyphal form is more invasive (Jacobsen et al 2012).

C. glabrata has never been observed in a filamentous form. This inability to adopt a filamentous growth mode has made *C. glabrata* relatively easy to distinguish from other *Candida* species. However, isolates of asexual budding yeast with no known filamentous form such as *C. glabrata* were originally assigned to the genus *Torulopsis* and the organism was originally designated *Torulopsis glabrata*. Despite the merger of *Torulopsis* into the genus *Candida* this designation has persisted in the medical literature (Csank & Haynes 2000).

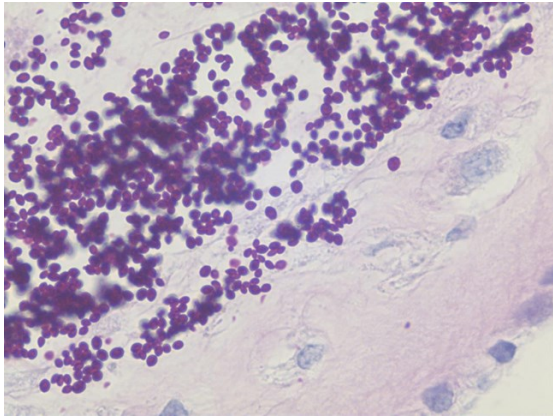


Figure 2 PAS x100

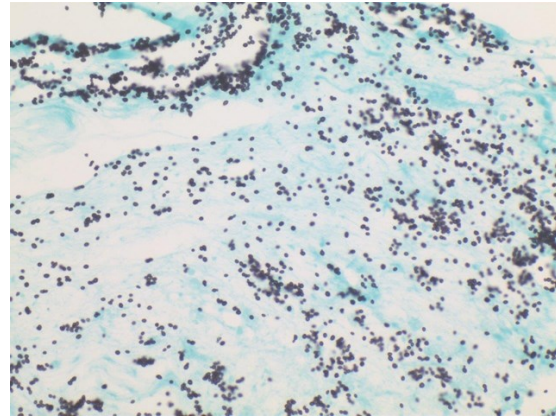


Figure 3 GMS x40

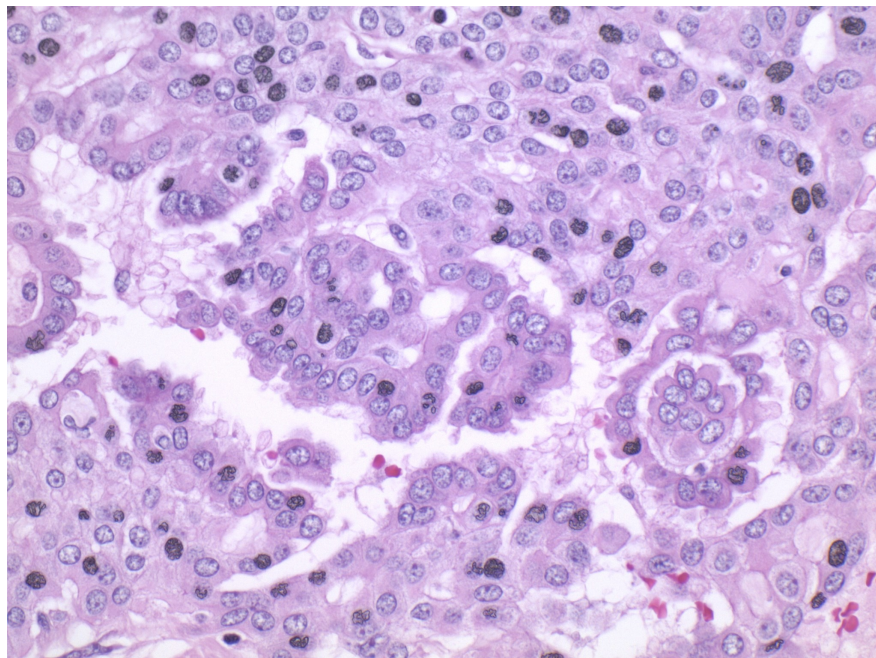
References

Csank, C., & Haynes, K. (2000). *Candida glabrata* displays pseudohyphal growth. *FEMS microbiology letters*, 189(1), 115-120.

Henwood, A. F. (2017). Looks like fungi but it isn't—identifying pseudo-fungi. *Journal of Histotechnology*, 40(2), 40-45.

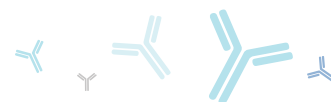
Jacobsen, I. D., Wilson, D., Wächtler, B., Brunke, S., Naglik, J. R., & Hube, B. (2012). *Candida albicans* dimorphism as a therapeutic target. *Expert review of anti-infective therapy*, 10(1), 85-93.

TEST & TEACH



What is the stain
What is the artifact
How would you fix it

p16^{INK4A} (IHC116)



The p16 (p16^{INK4A}) protein is a cyclin-dependent kinase (CDK) inhibitor that plays an important regulatory role in the cell cycle. By controlling the transition between the G1 and S phases through regulation of retinoblastoma protein, p16 decelerates cellular differentiation and therefore acts as a tumor suppressor, making it the key marker in several human cancers including head and neck cancer, perianal lesions, melanomas, gliomas, lymphomas, and some types of leukemia. p16 is also clinically indicated in carcinomas of the esophagus, pancreas, lung, biliary tract, liver, colon, and urinary bladder.

Features

- GeneAb p16 [IHC116] is a high affinity antibody leading to improved specificity and increased staining intensities.
- Both concentrate (1:100 - 1:400) and predilute (RTU) format are available for your lab.
- Request a sample admin@metagene.com.au

Product Information

REF

| | |
|------------|---------------------------|
| IHC116-100 | 0.1 ml, Concentrate |
| IHC116-1 | 1 ml, Concentrate |
| IHC116-7 | 7 ml, Predilute |
| IHC116-PC | 3 Positive Control Slides |

Description

Source

Mouse Monoclonal

Designations

IVD:   RUO:   

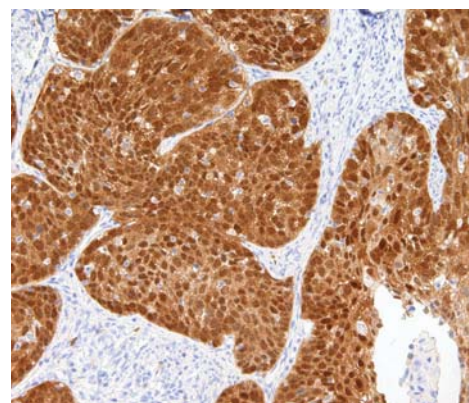


Fig1. GeneAb™ p16 [IHC116] on Cervical Cancer

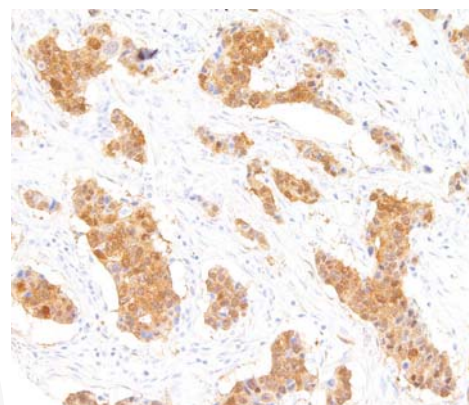


Fig2. GeneAb™ p16 [IHC116] on Breast Cancer

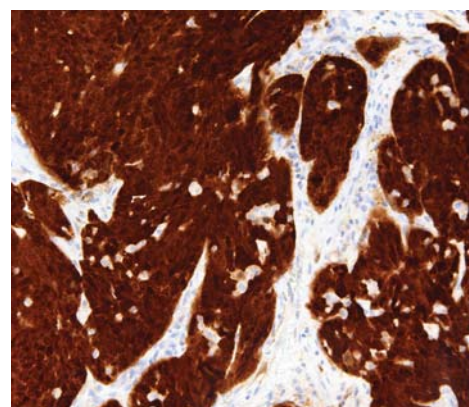


Fig3. GeneAb™ p16 [IHC116] on Ovarian Cancer

Test for validity of formalin concentrations

Linda Prasad and Tony Henwood (Children's Hospital at Westmead)

Schiff's reagent (as used in the PAS stain) is used to detect aldehydes and in this technique it is used to titrate a solution of formalin. The concentration of which is unknown (Jaspers 1987).

Solutions:

1. 1 ml of formalin fixative to be tested.
2. 2.4% aqueous sodium bisulphite (sodium metabisulphite) – prepare fresh.
3. Schiff's reagent.

Procedure:

1. Add 1 ml of formalin to 5 ml of sodium bisulphite.
2. Mix and react for 15 minutes at room temperature stirring from time to time.
3. Add 100 μ l of Schiff reagent.

Results:

If solution turns a deep violet then initial concentration of formalin is in excess of 4% (i.e. 1.6% formaldehyde).

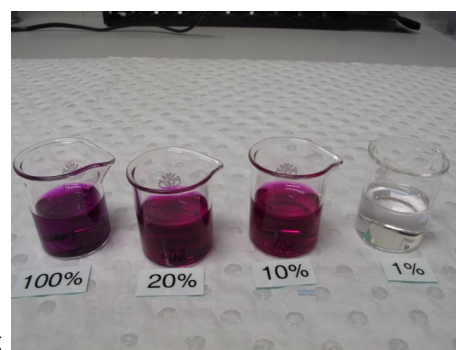
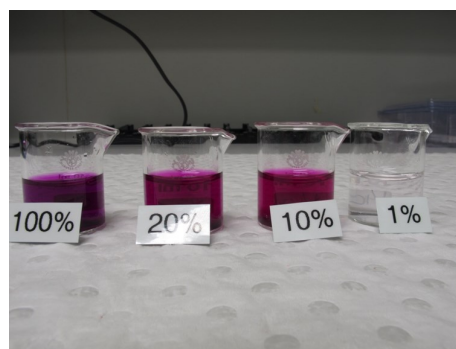
Simos et al (2011) described a simple method of estimating formaldehyde concentration using the measurement of specific gravity. Formaldehyde solutions of different concentrations were produced by diluting various amounts of analytical grade reagent (100% saturated formaldehyde solution, 36.5–38.0% weight/weight (w/w) on manufacturer assay) in distilled water. The concentration of the analytical grade reagent used as a stock solution provided by the manufacturer is accepted.

The concentration range was between 1.9% and 19.0% of formaldehyde w/w. The specific gravity of each solution was measured by using a volume of 0.5mL and the numeric result recorded. The measuring instrument was a pocket digital hand-held urine specific gravity refractometer. A drop of solution with a minimum volume of 0.3mL is placed in the prism and a result is displayed on the LCD screen 3 seconds later. Digital handheld refractometers determine the specific gravity of a solution using the critical angle principle. The light source which is known as a light-emitting diode focuses into the prism element of the device. The presence of formaldehyde solution in the prism allows only some of the light to be transmitted through the solution. The remaining light which is able to be reflected onto a linear array of photodiodes produces a shadow line. The physical relationship of light transmission through a substance is known as the refractive index.

Simos et al (2011) were able to show a directly proportional relationship between specific gravity and formaldehyde concentration.

References

- Jaspers B (1987) "Practical Advice to the PAS Reaction" J Histotechnol 10 (4): 263-265.
- Simos P, Wright RG, Phillipa CJ (2011) "A method to estimate the formaldehyde concentration in fixative solutions" Pathology 43(4):394.



The Long Way Round

The journey to my current position as a TAFE Teacher and Technical Officer at a large private laboratory is a long, and mostly backwards, one. It started when my mother, who was an IT manager of a small skin histology lab, came home one day and asked if I wanted a job helping out in the laboratory. I had spent the year after high school a bit lost for direction since I didn't get the results required to get into the IT courses at university. So obviously, I jumped at the opportunity to do something.

After a few years working there, the company was bought out, and we were merged with Douglass Hanly Moir pathology. It was here, with the exposure to the full array of specimens received in Histology, I found a love for science. Particularly for anatomy and pathology.

Eventually I decided I wanted to pursue pathology as a career and enrolled in a Diploma of Laboratory Technology at TAFE. Here I found my second love, sharing knowledge. As someone with actual laboratory experience, I was often asked questions about what it's like in a real lab, "are they really that strict with mislabelled specimens?" was a common question.

While studying Histology I found that I already knew most of the concepts and was able to act as a tutor to my peers. This was noticed by the teacher and she suggested I think about becoming a teacher. Once I graduated, I was surprised to be offered a job teaching Histo 1, affectionately called 'Baby Histo'.

On top of this new responsibility of sharing my love for Histo, I have also just started a Bachelor of Biomedical Science at UTS, at the tender age of 29, to further my career goals of becoming a Scientific Officer.

So, my journey was very much backwards. I got the job before I had studied, and even before I had a passion for science. But it has led me to where I am now and looking back, I wouldn't want to end up anywhere else.

James Townsend
Technical Officer DHM Pathology
TAFE Teacher
Uni student



There is more to Perls' than just Iron

Tony Henwood. Histopathology, the Children's Hospital at Westmead

In histotechnology we are familiar with using potassium ferrocyanide to detect ferric iron (Fe^{3+}) (ie hemosiderin) in biological tissue. Potassium ferrocyanide reacts with ferric iron in acidic solution to produce the insoluble blue pigment, commonly referred to as Prussian blue. This is commonly known as the Perls' reaction. To detect ferrous iron (Fe^{2+}), potassium ferricyanide is used instead in the Turnbull blue staining method. The material formed in the Turnbull's blue reaction and the compound formed in the Prussian blue reaction are the same. But there are other uses for Prussian blue especially as an antidote for thallium poisoning.

Thallium is an odourless, tasteless, and colourless heavy metal discovered in the 1860s during the use of flame spectroscopy to experimentally determine the composition of minerals. Thallium salts were first used as pesticides in Germany in the 1920s and because of their severe toxicity eventually became used as rodenticides. However, after several poisonings, thallium use as rodenticide was banned in the United States in 1965. Thallium is still considered one of the more toxic compounds known to man with a lethal dose reported to be 10–15 mg/kg and with deaths in adults being reported from doses as low as 8 mg/kg (Riyaz et al 2013).

The pathophysiology of thallium toxicity is not well understood, but the structural similarity of this compound to potassium is thought to play a key role in the handling of thallium ions by the body in overdose situations. As a mitochondrial poison, thallium appears to bind sulfhydryl groups on the mitochondrial membrane to in-

terrupt the activity of sodium–potassium ATPase. Thallium is thought to have a tenfold higher affinity for this enzyme compared with potassium (Cvjetko et al 2010, Riyaz et al 2013).

The FDA has determined that 500mg of insoluble Prussian blue capsules are safe and effective for the treatment of patients with known or suspected internal contamination with not only thallium, but also radioactive thallium and radioactive caesium (Altagracia-Martínez et al 2012). Constipation is one side effect of antidote therapy with Prussian blue.

Prussian blue is used as an orally ingested drug to enhance the excretion of isotopes of caesium and thallium from the body by means of ion exchange. Thallium ions are excreted into the intestine and reabsorbed mainly in the colon into blood to be excreted again into the intestinal tract (enteroenteric circulation) while caesium is excreted into the intestinal tract in the bile to be reabsorbed into portal blood and transported to the liver to again be excreted via bile (enterohepatic circulation). Orally administered Prussian blue is able to take over these two toxic metal ions in the intestine, stopping the reabsorption from the gastrointestinal tract and favouring their faecal excretion. Caesium and thallium adsorption by Prussian blue involves chemical ion exchange where Prussian blue exchanges a potassium ion with thallium and other monovalent cations. The affinity of Prussian blue for a given metal ion increases as the ionic radius (i.r.) increases, so it will bind preferentially caesium (i.r. 0.169 nm) and thallium (i.r. 0.147 nm) rather than the essential metal ions potassium (i.r. 0.133 nm) and sodium (i.r. 0.116nm).

Therefore, a depletion of potassium and sodium is not likely. Also rubidium (i.r. 0.148 nm) binds to Prussian blue. Prussian blue is not intestinally absorbed in significant amounts, and can be considered safe and effective for the treatment of internal contamination with radioactive or nonradioactive thallium, and with radioactive caesium (Crisponi & Nurchi 2016). The accident at the Chernobyl nuclear power plant in 1986 resulted in contamination of large tracts of agricultural land and forests in northern Europe, and particularly in Belarus, the Russian Federation, and Ukraine. Of particular radiological significance was that up to 1997, cesium-137 and strontium-90, which migrate through the soil-plant-animal food chain and accumulate in milk and meat, were consumed by the human population inhabiting these contaminated regions. Investigations were conducted between 1990 and 1995 to evaluate the use of Prussian blue compounds (in the form of boli, salt licks, or direct addition to the diet) in cattle for reducing the radioactive caesium content of milk and meat, and the subsequent effect of dung from treated animals on the transfer of radioactive caesium from soil to plants. Prussian blue has been demonstrated to be cost-effective and to reduce radioactive caesium levels significantly in the meat and milk of cattle grazing on contaminated land (Altagracia-Martínez et al 2012).

Prussian blue was first synthesized in 1704 by a Berlin colour-maker named Diesbach and has been used as an industrial and artist's pigment ever since. Prussian blue is a crystal lattice of potassium ferric (III)-cyanoferrate (II). Insoluble Prussian blue capsules contain insoluble ferric hexacyanoferrate (II), with an empirical formula of $\text{Fe}_4^{\text{III}} [\text{Fe}^{\text{II}}(\text{CN})_6]_3$ and have a molecular weight of 859.3 Da. It is available as a blue powder in 0.5 g gelatin capsules. Ferric hexacyanoferrate ($\text{Fe}_4^{\text{III}} [\text{Fe}^{\text{II}}(\text{CN})_6]_3$) or insoluble Prussian blue is

the active pharmaceutical ingredient of the drug product, Radiogardase. Radiogardase 500mg capsules are the first FDA-approved medical countermeasure for the treatment of internal contamination from radioactive caesium or thallium. Although it decreases radiation exposure, it does not treat its complications (Altagracia-Martínez et al 2012).

References

- Altagracia-Martínez, M., Kravzov-Jinich, J., Martínez-Núñez, J. M., Ríos-Castañeda, C., & López-Naranjo, F. (2012). Prussian blue as an antidote for radioactive thallium and cesium poisoning. *Orphan Drugs: Research and Reviews*, 2, 13-21.
- Crisponi, G., & Nurchi, V. M. (2016). Chelating Agents as Therapeutic Compounds—Basic Principles. *Chelation Therapy in the Treatment of Metal Intoxication*, 35.
- Cvjetko, P., Cvjetko, I., & Pavlica, M. (2010). Thallium toxicity in humans. *Archives of Industrial Hygiene and Toxicology*, 61(1), 111-119.
- Riyaz, R., Pandalai, S. L., Schwartz, M., & Kazzi, Z. N. (2013). A fatal case of thallium toxicity: challenges in management. *Journal of medical toxicology*, 9(1), 75-78.

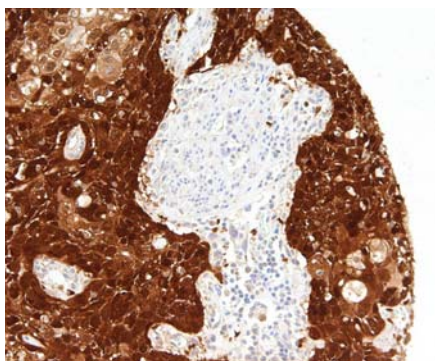


Fig4. GeneAb™ p16 [IHC116] on Bladder Cancer

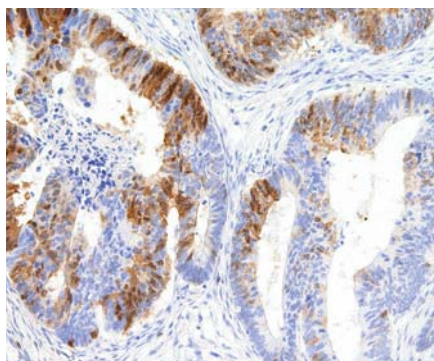


Fig5. GeneAb™ p16 [IHC116] on Colon Cancer

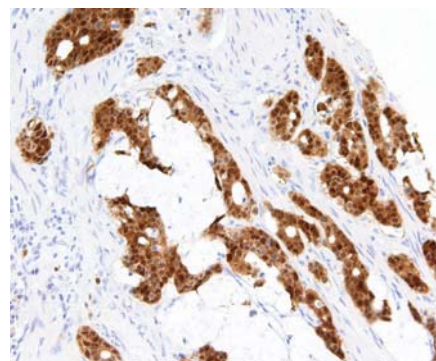


Fig6. GeneAb™ p16 [IHC116] on Esophagus Cancer

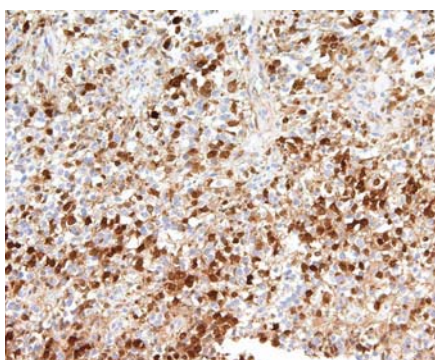


Fig7. GeneAb™ p16 [IHC116] on Glioma

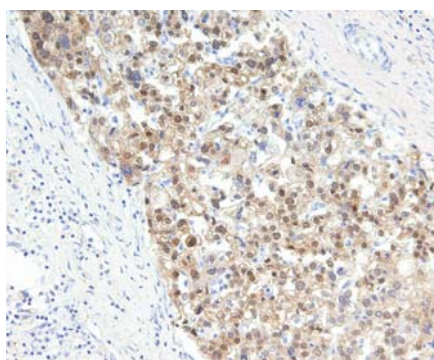


Fig8. GeneAb™ p16 [IHC116] on Liver Cancer

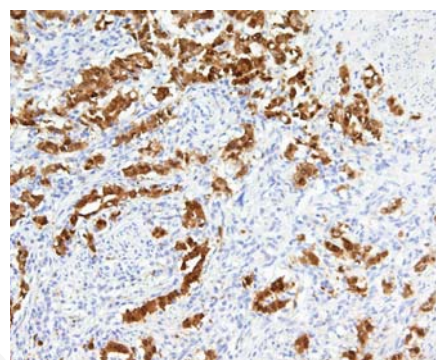


Fig9. GeneAb™ p16 [IHC116] on Stomach Adenocarcinoma

| System | Normal | Cancer |
|---------------------------|--------|--------|
| Digestive | | |
| Colon (<i>Fig5</i>) | 0/1 | 4/4 |
| Esophagus (<i>Fig6</i>) | 0/1 | 1/2 |
| Gallbladder | — | 0/1 |
| Liver (<i>Fig8</i>) | 0/1 | 1/4 |
| Pancreas | 1/1 | 0/1 |
| Rectal | — | 1/1 |
| Salivary Gland | 2/3 | — |
| Intestine | 0/1 | 2/2 |
| Stomach (<i>Fig9</i>) | 0/1 | 2/2 |
| Endocrine | | |
| Adrenal Gland | 1/2 | 0/1 |
| Parathyroid | 0/1 | — |
| Thyroid | 0/1 | 0/1 |
| Integumentary | | |
| Skin | 0/1 | 1/2 |
| Melanoma | — | 0/1 |
| Lymphatic | | |
| Spleen | 2/2 | — |
| Thymus | 0/1 | — |
| Tonsil | 1/1 | — |
| Lymphoma | — | 0/1 |

| System | Normal | Cancer |
|---------------------------------|--------|--------|
| Muscular/Skeletal | | |
| Bone Marrow | 1/1 | — |
| Heart Muscle | 0/3 | — |
| Skeletal Muscle | 0/1 | — |
| Nervous | | |
| Brain (<i>Fig7</i>) | 0/1 | 2/4 |
| Peripheral Nerve | 0/3 | — |
| Respiratory | | |
| Lung | 0/1 | 2/3 |
| Reproductive | | |
| Breast (<i>Fig2</i>) | 2/3 | 3/3 |
| Cervix (<i>Fig1</i>) | 0/1 | 3/4 |
| Endometrium | — | 2/2 |
| Ovary (<i>Fig3</i>) | 0/1 | 3/5 |
| Prostate | 0/2 | 0/2 |
| Testis | 0/2 | 0/1 |
| Urinary | | |
| Kidney | 0/3 | 0/2 |
| Urinary Bladder (<i>Fig4</i>) | — | 1/2 |
| Uterer | 0/1 | — |

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VENTANA DP 200 slide scanner

| | |
|---------------------|--|
| Slide capacity | 6 single slides, 3 double slides |
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| Focus method | Dynamic focus |
| Volume scan | Up to 15 layers |
| Time to view* | 20x: <49 seconds, 40x: <85 seconds for a 15mm x 15mm AOI |
| Scan time | 20x: approximately 36 seconds, 40x: approximately 73 seconds for a 15 × 15mm AOI |
| Slide handling | No slide handling, tray-based movement |
| Objective | Nikon CFI PLAN APO LAMBDA 20x |
| Dimensions / weight | 49.78cm x 67.82cm x 46.23cm / <48 kg |
| Calibration | Auto-calibration |

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9TH NATIONAL HISTOLOGY CONFERENCE 2019

ADELAIDE • SOUTH AUSTRALIA
24-26 MAY 2019

2019 National Histology Conference

SCIENTIFIC PROGRAM IN PROGRESS

FRIDAY 24 May 2019

| | |
|--------------------|--|
| 0800 - 1800 | EXHIBITION BUMP IN Hall L Adelaide Convention Centre |
| 0900 - 1630 | PRE-CONFERENCE WORKSHOPS nearby offsite location <i>See below for more details</i> |
| 1400 - 1600 | PRE-CONFERENCE SOCIAL PROGRAM TOUR OPTIONS nearby offsite location <i>See below for more details</i> |
| 1800 - 2000 | <p>WELCOME FUNCTION Hall L Adelaide Convention Centre</p> <ul style="list-style-type: none"> — Dress Code: Neat Casual — Cost: \$85 per person (included with all 'Full Conference' Registrations) <p>A great networking opportunity that will allow you to catch up with colleagues and mingle with delegates and trade attending the meeting. The welcome reception will be held at the conference venue in with the Trade Exhibition Hall.</p> <p><i>*This function is included with all 'Full Delegate' registrations. Day Only delegates & partners must pay the extra ticket cost. Tickets can be purchased during registration or by contacting InFront Events</i></p> |

PRE-CONFERENCE WORKSHOPS

| MORNING WORKSHOPS | |
|---|--|
| <p>Down the Ureter <i>Complex Cut-up Workshop</i></p> <p>From diagnosis to prognosis, a close-up inspection and hands on grossing tutorial of a complex kidney specimen</p> <ul style="list-style-type: none"> — When: Friday 24 May 2019 — Time: 0900 - 1200 — Venue: Adelaide University — Cost: \$95.00 (including morning tea) | <p>Troubleshooting from Diagnosis to Prognosis - error reduction in the anatomical pathology laboratory</p> <p>How many errors can your team find?</p> <ul style="list-style-type: none"> — When: Friday 24 May 2019 — Time: 0900 - 1200 — Venue: Adelaide University — Cost: \$95.00 (including morning tea) |
| AFTERNOON WORKSHOPS | |
| <p>Troubleshooting from Diagnosis to Prognosis - error reduction in the anatomical pathology laboratory</p> <p>How many errors can your team find?</p> <ul style="list-style-type: none"> — When: Friday 24 May 2019 — Time: 1330 - 1630 — Venue: Adelaide University — Cost: \$95.00 (including afternoon tea) | <p>Syphilis down the Scope <u>Sponsored by: Trajan Scientific</u></p> <p>A hands-on comparative tutorial of IHC staining methods vs old school special stains</p> <ul style="list-style-type: none"> — When: Friday 24 May 2019 — Time: 1330 - 1630 — Venue: Adelaide University — Cost: \$95.00 (including afternoon tea) |

PRE-CONFERENCE SOCIAL PROGRAM | TOUR OPTIONS

| | |
|--|--|
| <p>'Bats, Balls and Divas' Adelaide Oval Walking Tour</p> <ul style="list-style-type: none"> — When: Friday 24 May 2019 — Time: 1400 - 1600 — Duration: 90 mins (approx. 2.5kms walk with some stairs and escalators) — Venue: Adelaide Oval, North Adelaide — Dress Code: Comfortable attire & walking shoes. — Cost: \$55 per person** <p><i>**minimum numbers apply to this tour tickets can be purchased during registration or by contacting InFront Events</i></p> | <p>'Rivers of Gin' Popeye, River Torrens Cruise</p> <ul style="list-style-type: none"> — Date: Friday 24 May 2019 — Time: 1400 - 1600 — Duration: 90 mins (includes 45-minute masterclass and 3x glass gin flight) — Venue: River Torrens — Dress Code: Casual — Cost: \$55 per person <p><i>**minimum numbers apply to this tour tickets can be purchased during registration or by contacting InFront Events</i></p> |
|--|--|

Please note: the 2019 National Histology Conference Program is current as at 26 March 2019, however remains subject to change



9TH NATIONAL HISTOLOGY CONFERENCE 2019

ADELAIDE • SOUTH AUSTRALIA
24-26 MAY 2019

2019 National Histology Conference

SCIENTIFIC PROGRAM IN PROGRESS

SATURDAY 25 May 2019

| | |
|--|--|
| 0800 | REGISTRATION OPEN Tea & coffee upon arrival in Exhibition - Hall L Adelaide Convention Centre |
| OPENING SESSION 1 PLENARY – HALL M Chair: [SA] | |
| 0900 - 0930 | Official Opening His Excellency the Honourable Hieu Van Le AC, Governor of South Australia |
| 0930 - 1030 | Practical utilization of WHO2016 and cIMPACT-NOW in brain tumor diagnosis Dr Arie Perry <i>The WHO 2016 classification scheme and more recent advances have resulted in major diagnostic shifts for diffuse gliomas, a subset of ependymomas, and embryonal neoplasms. The new approach focuses on the integrated diagnosis, which incorporates classic histopathology with specific molecular signatures. A number of surrogate immunohistochemical (IHC) stains are now also available for identifying biologically distinct molecular subtypes. The most common division is that of the IDH-mutant diffuse gliomas from their biologically more aggressive IDH-wildtype counterparts. Other examples include histone H3 mutations in the diagnosis of diffuse midline gliomas (K27M mutation) and pediatric glioblastomas (G34R/V mutations), as well as the identification of a more aggressive supratentorial ependymomas defined by RELA fusion (L1CAM positive) and posterior fossa B ependymomas (loss of H3K27me3 staining). Also, in diffuse astrocytomas, the majority of IDH-mutant and H3 G34-mutant cases additionally show loss of ATRX expression and strong p53 staining, serving as clues for further molecular testing as needed. Oligodendrogliomas still require detection of 1p/19q codeletion by molecular testing in addition to IDH mutation, although the vast majority of these can be predicted ahead of time based on the combination of classic histology with retained ATRX expression and negligible p53 expression. In the case of medulloblastoma subtyping, a number of WNT and SHH surrogate stains are available, whereas other IHC markers may be useful for identification of embryonal tumor with multilayered rosettes (LIN28), atypical teratoid/rhabdoid tumor (INI1, BRG1), and high-grade neuroepithelial tumor with BCOR alteration (BCOR).</i> |
| 1030 - 1100 | MORNING TEA Hall L Adelaide Convention Centre |
| SESSION 2 PLENARY – HALL M Chair: [NSW] | |
| 1100 - 1130 | RCPAQAP update |
| 1130 - 1230 | Molar Pregnancies A/Prof Lynette Moore, Dr Sui YU, Shanna Suwalski |
| 1230 - 1330 | LUNCH Hall L Adelaide Convention Centre |
| SESSION 3 PLENARY – HALL M Chair: [QLD] | |
| 1330 - 1430 | Presentation Title to be confirmed Dr Rajiv Patel |
| 1430 - 1500 | When the unexpected occurs; TTF-1 a new marker for CMV? Michael Bushe-Jones, Path West <i>Working in a diagnostic histopathology laboratory can be at times mundane and tedious. With repetition and high workloads we can occasionally make simple errors. Sometimes these errors can lead to unexpected discoveries. When staining a sample with the Thyroid transcription factor 1 (TTF-1) antibody in our laboratory an incorrect control slide was accidentally used. During routine quality control check it was discovered that this tumour marker seemed to stain the cytomegalovirus (CMV) infected cells on the aberrant control. To determine if this was a legitimate phenomenon, a cohort of known CMV positive cases was sourced and stained with the TTF-1 antibody. Close analysis of this cohort showed that TTF-1 not only reliably stained CMV infected cells but it seemed to also stain some infected cells which had not been picked up by the CMV antibody. To explore this further a new dual stain was created to view both antibodies in a single section allowing direct comparison of the cells stained. With this in mind an additional cohort was created that consisted of cases with suspected CMV that had little or no convincing staining. The results showed that the dual stain could improve CMV IHC sensitivity and sparked an investigation into why TTF-1 stains CMV infected cells.</i> |

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SCIENTIFIC PROGRAM IN PROGRESS

SATURDAY 25 May 2019

| | |
|---|---|
| 1500 - 1530 | AFTERNOON TEA – sponsored by Olympus Australia Hall L Adelaide Convention Centre |
| SESSION 4 PLENARY – HALL M Chair: [VIC] | |
| 1530 – 1645 | Renal Biopsy Collection – Diagnosis to Prognosis The Clinician - Dr Rachel Tan, The Laboratory - Sharin Prakash, The Pathologist – Dr Catriona Brennan <i>Panel / interactive session with Renal Clinician & Pathologist</i> |
| 1645 | SESSIONS CLOSE |
| 1900 - late | <p align="center">CONFERENCE GALA DINNER Through the Looking Glass sponsored by Agilent Technologies Panorama Room Adelaide Convention Centre</p> <p>— Dress Code: Cocktail / After Five — Cost: \$150 per person [included with 'Full Conference + Gala Dinner' Registration]</p> <p>Whatever happened to Alice? Maybe you can find out when you venture through the looking glass and into the Agilent National Histology Gala Dinner on Saturday 25 May from 7pm in the aptly named Panorama room at the Adelaide Convention Centre.</p> <p>Enter the psychedelic doors into Alice's world of giant tea pots, the strangest of flowers and gigantic mushrooms. Dine on 3 courses of the unbelievable 'Honest Goodness' menu complemented by exquisite South Australian wines & beers while partying with one of Adelaide's favourite cover bands till your feet hurt. Mad hats are optional but definitely encouraged!</p> <p><i>*this function is included with the 'full conference + gala dinner' registration only. All other delegate registrations & partners must pay the extra ticket cost. Tickets can be purchased during registration or by contacting InFront events</i></p> |



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SCIENTIFIC PROGRAM IN PROGRESS

SUNDAY 26 May 2019

| | |
|---|---|
| 0800 | REGISTRATION OPEN Tea & coffee upon arrival in Exhibition - Hall L Adelaide Convention Centre |
| SESSION 5 PLENARY – HALL M Chair: [NSW] | |
| 0900 – 0945 | <p>The Evolution and Revolution in Cancer Treatment Ian Olver AM</p> <p><i>We have seen a paradigm shift in cancer treatment towards more targeted therapies in all modalities, but particularly systemic treatments. Cytotoxic drugs have given way to targeted small molecules and antibodies, and treatments can be selected using biomarkers to indicate the targets present in individual tumours. Immunotherapy is unlocking the potential of the body's immune system to attack the cancer. Genomic analysis will become more important than histological subtype in selecting treatments and may be achieved by via liquid biopsies.</i></p> |
| 0945 – 1035 | <p>RCPAQAP approach for the Assessment of HER2BRISH Gastric Technical and Diagnostic Proficiency Neeta Lal & Zenobia Haffajee, RCPAQAP</p> <p><i>In 2011, the RCPAQAP Anatomical Pathology discipline established an EQA assessment for the proficiency testing of HER2 BRISH Gastric testing.</i></p> <p><i>This is a combined EQA exercise which comprises of a technical and diagnostic component. The aim of this exercise is to assess both the technical performance of participating laboratories for quality of staining as well as the pathologists' interpretation of the HER2 ISH stain by providing HER2 gene mean cell counts and HER2 BRISH status from the stained slide according to the assessment criteria provided.</i></p> <p><i>This presentation will provide an overview of the HER2 BRISH Gastric Program, assessment process and highlight the results from previous surveys.</i></p> |
| 1035 – 1105 | MORNING TEA Hall L Adelaide Convention Centre |
| SESSION 6 PLENARY – HALL M Chair: [VIC] | |
| 1105 – 1135 | <p>Diagnostic utility of combined C4d and C5b-9 staining in the diagnosis of Gestational Alloimmune Liver Disease (GALD) Bronwyn Christiansen, Royal Children's Hospital</p> <p><i>Gestational Alloimmune Liver Disease (GALD) is currently diagnosed using correlation of clinical, biological, radiological and pathological findings. The diagnosis of GALD may be difficult to make as there are no specific clinical or pathological features. The diagnosis is often made after excluding other fetal and neonatal liver diseases. GALD is proposed to cause destruction of fetal liver cells due to binding of maternal alloimmune antibodies with complement activation. This may result in fetal demise or Neonatal Hemochromatosis. Treatment of women in subsequent pregnancies with intravenous immunoglobulin (IVIg) is indicated following diagnosis of GALD in affected babies. It is important to establish a firm diagnosis of GALD prior to IVIg treatment. The current methodology relies on the use of a single marker, C5b-9, for the membrane attack complex showing a positive reaction in liver cells. This project examines the utility of combining immunohistochemistry for C4d, a marker of activation of the classical complement pathway, with C5b-9 in the diagnosis of GALD. It demonstrates that with well-preserved liver tissue, combined C4d and C5b-9 staining can be used to improve the sensitivity and specificity of a diagnosis of GALD.</i></p> |
| 1135 – 1225 | <p>The History of Hematoxylin Jean Mitchell, National Society for Histotechnology (NSH)</p> <p><i>The first step to diagnosis in the vast majority of tissue slide preparations in any histological laboratory, be it clinical, research or veterinary, is the use of hematoxylin as a routine nuclear stain. Hematoxylin may be a common product in the histology laboratory but its origin, discovery, historical, economic and medical background is anything but common. This presentation will focus on all things hematoxylin including its logwood tree origin, its history and worldwide impact as a textile dye and its discovery as a biological stain. We will further explore the pathologists and scientists that lend their names to different types of hematoxylin and the techniques they incorporated into our all-important diagnostic nuclear stain.</i></p> |

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| | |
|---|--|
| 1225 - 1245 | <p>The Breast Host in Town Jacqui Simmonds, <i>NSW Health Pathology</i></p> <p><i>In mid 2017, a patient attended the Tweed Heads Breast Screen clinic due to some calcifications that had been noted in her breast at ultrasound. There was some question surrounding DCIS so a VACB was performed.</i></p> <p><i>What this biopsy revealed however was not in fact DCIS or another type of cancer, for that matter, but calcified Schistosoma japonicum eggs in her breast. A parasite that is usually passed through the body, or at the very least retained in the liver or lung.</i></p> <p><i>Only a handful of these cases could be found globally so to find one in the NSW region made it all the more interesting.</i></p> |
| 1245 - 1340 | <p>LUNCH Hall L Adelaide Convention Centre</p> |
| <p>SESSION 7 PLENARY – HALL M Chair: Alex Szabo [SA]</p> | |
| 1340 - 1410 | <p>The importance of cleanliness: the use of archived FFPE tissues for research purposes Dr Lauren Thurgood</p> <p><i>The clinical standard for preparing tissues for histopathological assessment is formalin fixation and paraffin embedding (FFPE). During this process, the tissue architecture is preserved and often excess tissue is stored in archival banks. This resource offers a vast repository of tissue material which in most cases is paired with detailed clinical data.</i></p> <p><i>For researchers, access to excess FFPE tissues from diagnostic laboratories offers a valuable resource for retrospective analysis of diagnostic and prognostic biomarkers, as well as the ability to understand the molecular mechanisms of disease initiation and progression. Various studies have shown that even when stored for decades the material within the blocks does not change over time.</i></p> <p><i>However, the process of FFPE induces numerous chemical changes and degradation to DNA, RNA and protein that can hamper its usefulness for research purposes. To be able to consistently generate reproducible results in the laboratory there are several important factors that need to be considered when processing samples for research use which varying depending on the downstream molecular applications. For example, if RNA is to be extracted from the FFPE blocks, the first 2-3 sections should be discarded as oxidation on the tissue block surface can rapidly degrade the RNA.</i></p> <p><i>For proteomic analysis, sections need to be mounted on uncoated slides as PEI coating can introduce polymer contamination into the mass spectrometer.</i></p> <p><i>These factors will be further discussed along with some examples of where we have utilised FFPE samples to answer key questions in our research on chronic lymphocytic leukaemia.</i></p> |
| 1410 - 1440 | <p>Cryosectioning of Cancer Tissues for Proteomic Analysis Clare Loudon, <i>Children's Medical Research Institute</i></p> <p><i>Proteomics involves simultaneous measurement of thousands of proteins in a single sample. ProCan® is a major high-throughput research program using Mass Spectrometry to examine the proteome of human cancer with the goal of improving diagnostic and prognostic evaluation. Tissue samples are completely disrupted by pre-analytic processing and histopathologic features must be documented for comparison with proteomic profiles. We describe an approach allowing matched histopathology and proteomics analysis of cryopreserved cancer tissues</i></p> |
| 1440 - 1450 | <p>Conference Closing Statement, Next Conference Host City Announcement, Final Thank You's</p> |
| 1450 | <p>CONFERENCE CLOSES</p> |

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FIXATION WORKSHOP

Momoko Sakaki-Histopathology, the Children's Hospital at Westmead

The Histotechnology Society of NSW held its first workshop of the year on Saturday 30th March 2019 at the University of Technology, Sydney (UTS). The topic was **Fixation: Planning, Principles and Preparation for Histology** presented by Dr Tamara Sztynka from UTS and Dianne (Di) Reader from Royal North Shore Hospital (RNSH) and UTS.

Despite being a rainy and early Saturday event, we had a great turn out of dedicated Histotechs and Histology students. The workshop provided an excellent framework for planning and preparing a sample for histology.

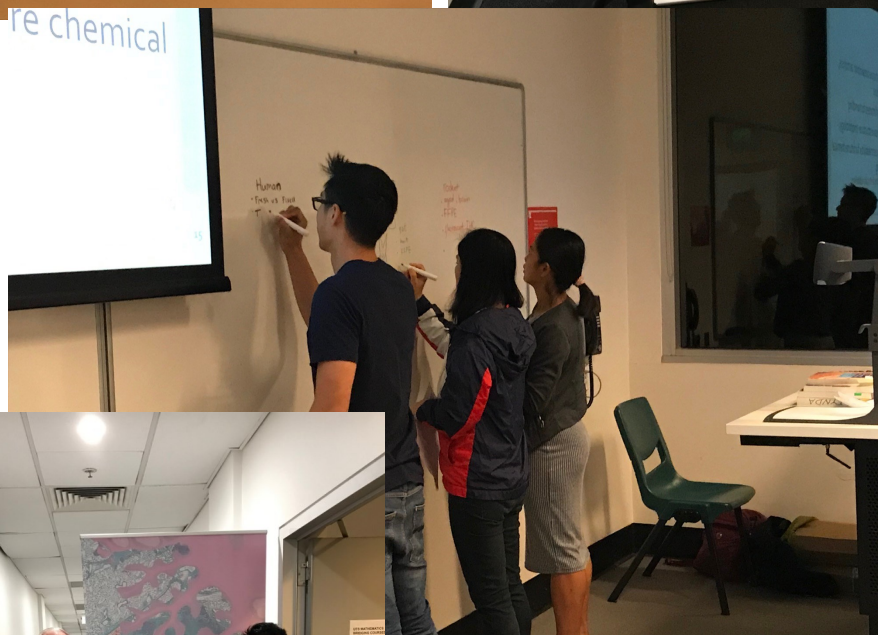
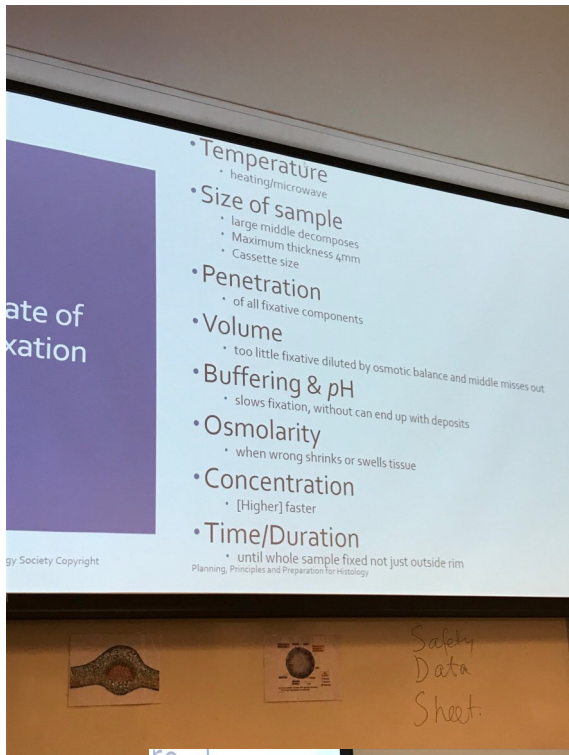
In Histology, formalin is seen as a “catch all” fixative but despite its many positive qualities, using formalin can mask or destroy the particular cell component of interest. Even when using formalin, there is a myriad of factors to consider. As explained by the presenters of the workshop, having a fix first, think later approach can lead to disastrous or inaccurate results and wasted time, money and sacrifice (if using animals).

So the take home message of this workshop was clearly in the title – **Plan** your experiment or test, understand the **principles** of the fixative and the effect it will have on your analyte and **prepare** the necessary equipment, reagents, approvals and supervision to obtain your result.

A huge thank you to Tamara and Di for all your hard work to make this workshop a successful event. Additional thanks goes to committee members Trevor Hinwood, Ewen Sutherland, Andrew Da Silva and Adrian Ureta for assisting with the set up and registrations on the day as well as to all the behind the scenes committee members who helped plan this event.

WATCH THIS SPACE!

Content from this workshop and future workshops will be added to the Histotechnology Society of NSW Website in an exclusive member's only area. Check your emails or follow us on Facebook for updates



MEET LABBY THE HISTO LAB

Please give a big welcome to Labby, the Histo Lab. Labby is the newest member of the Histo team and is learning all about Histology.



panion animal of President Madeup and his family. But little Labby always has a passion and curiosity for science and pathology, particularly Histology. So he studied hard in Puppy College and is now proudly working as a Lab Technician in a Histology lab.

(Or he was bought off eBay and his lab coat sewn by a pathologist... whichever story you want to believe).

Follow Labby's journey in the Histology laboratory by going to the Histotechnology Society of NSW Facebook Page and clicking the Like or Follow button.

For those who follow the Histotechnology Society of NSW on Facebook, you would have seen this cute little face in recent posts.



Labby comes from a long line of law enforcement Labradors, including his mother who was a police dog and his father who was in drug detection. His grandfather was the first canine trained in the Police Dog Unit in Nonexistria and retired to be the com

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